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The Finance of Inflation

By H. B. Rose

> There can be no remedy for inflation and the steadily rising prices which go with it which does not include, and indeed is not founded upon, a control of the money supply. So long as it is generally believed that the Government are prepared to see the necessary finance produced to match the upward spiral of costs, inflation will continue and prices will go up.
>
> *The Chancellor of the Exchequer*,
> 19th September, 1957.

This, the Chancellor declared in the House of Commons, is the "essence of the matter" of preventing inflation; the purpose of the Government's latest measures was "to serve notice on ourselves and on the world outside that we [the Government] are no longer prepared to underwrite, through the banking system or through spending by the Government, the consequences of inflationary actions." How does this policy appear in the light of the past three years?

1955–56: INFLATION WITH A FALLING QUANTITY OF MONEY

Between February, 1955, and mid-1956 the volume of bank deposits, as indicated by the seasonally-corrected index published by Lloyds Bank, fell by 7 per cent.; in the second half of 1956 it retraced only a small part of its downward path. On the average, clearing bank deposits were 3 per cent. lower in 1956 than in 1955. Moreover, the level of bank advances, which the government evidently regard as a more critical element in the finance of inflationary spending, was reduced by approximately 10 per cent. in the year following the Chancellor's directive to the banks in July, 1955.

How is it, then, that the economy was able in 1956 to finance an 8 per cent. increase in gross national expenditure, almost wholly reflecting a rise in costs and prices? The answer is, of course, that inflation does not require an increase in the quantity of money if it can be financed by a more rapid turnover of the existing money stock. In 1955, gross national expenditure was 2·6 times as large as the total of bank deposits,

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Mr. Rose is an economist employed by a large insurance company and the author of "Monetary Policy and the Capital Market 1955–56", *Economic Journal*, September, 1957.

in 1956 2·9 times as large. The apparent smallness of the absolute change in these figures is deceptive; from them it can be calculated that the rise in expenditure would have required an increase in the level of bank deposits of nearly £700 millions, or more than one-tenth, if velocity had remained unchanged.

An increase in the velocity of circulation is the effect of inflationary forces, not their cause. To discover why this increase took place, despite the implementation of a policy similar to that announced in September, it is necessary to consider the strength of the demand for finance by spenders and the channels through which this finance was supplied.

The inability of government policy to check inflation in 1955–56 reflected the failure of the Chancellor and the Governor of the Bank of England to win the battle of business expectations, a battle in which success or failure is likely to become cumulative. With orders for capital goods greatly in excess of the capacity of producers, the volume of investment expenditure actually carried out was insensitive to any adjustments in investment plans that may have been made in response to the government's measures. The existence of a long "queue" for capital equipment implies that the expected rate of profit on most investment projects far surpassed the market rate of interest. Hence, the rise in interest rates that took place over this period did not raise the cost of finance to the point at which many projected investments ceased to appear attractive. To have caused the abandonment of projects already under way would have needed a far more severe deterioration in the business climate.

The supply of funds required to finance an inflationary level of investment expenditure, if the total stock of money is not increased, can come only from the more intensive use of existing cash balances. Some of the balances that are lying comparatively idle must be drawn into the stream of revolving active money, and when it is the would-be spenders themselves who possess surplus cash balances the capital market is by-passed. As a result, official barriers set up by the authorities to impede the flow of finance are to this extent ineffective.

On the side of supply, the financial weakness of the government's monetary policy in 1955–56 lay chiefly in the fact that many companies were highly liquid when the period began. Evidence for this is provided by the quarterly summaries of company balance sheets tabulated by *The Economist*. This

sample is a valuable guide to the financial position of public companies in manufacturing, building and distribution. Although it covered in 1956 only about 1,700 returns, the companies in question accounted for half of the total gross income of companies as estimated in the National Income Blue Book. Financial and other non-manufacturing concerns, as well as oil, rubber and tea companies, are excluded.

The picture that emerges is that, in the field covered by *The Economist's* statistics, companies in the aggregate were in a position to finance a level of capital investment, in money terms, in excess of that in 1954 merely by drawing on their existing cash balances and without, in most cases, even having to deplete their gilt-edged holdings. The threat of a reduction in bank overdrafts with which the Chancellor's directive confronted them was not a serious one, for their combined holdings of cash and securities were in the aggregate four times as large as their combined bank loans. Moreover, gilt-edged securities formed only a small proportion of their liquid assets (the bulk consisting of cash and Tax Reserve Certificates), so that the weakness of the gilt-edged market caused companies little embarrassment.

Even within this sample, of course, individual companies were relatively illiquid, but this does not destroy the validity of these general observations: for within the company sector finance continued to find its way to those firms needing it through the channel of trade credit, out of range of official measures. Through this medium, the use of which has grown more rapidly than any other form of business finance over the past ten years, funds secured by so-called "essential" borrowers from the new issue market and the banks could eventually reach the hands of those outside the field of official approval.

Between the summer of 1955 and that of 1956 bank advances were cut in a number of industries, but the reduction was particularly severe in the case of persons and hire-purchase finance companies. The latter were able to reduce their bank loans, partly because the demand for hire-purchase accommodation had fallen as a result of the tightening of hire-purchase regulations and partly because they succeeded in securing outside finance. Until the minimum size of new issue requiring C.I.C. consent was lowered from £50,000 to £10,000 in March, 1956, this took the form of new issues. Thereafter, the finance houses turned to accepting temporary deposits from the public at relatively high rates of interest.

Persons paid off their overdrafts, at least in part, by selling securities, thus helping to depress Stock Exchange prices. The surplus balances of other persons must have been used, directly or otherwise, to help sustain the high level of new issues and to provide the local authorities with part of the funds they were obliged to seek from the public after the government's decision to restrict their access to Exchequer loans in October, 1955. The local authorities were successful in raising large amounts by way of marketable issues, mortgages and temporary deposits.

In short, the policy of reducing the quantity of money failed to prevent inflation in 1955–56 for two reasons. First, the reduction made was not sufficient, in view of the high liquidity of many companies at the time. Secondly, the capital market fulfilled only too well its function of providing would-be spenders with funds during a period in which the onrush of the capital investment boom had too great a momentum to be stopped by a few warning shots.

How does the position look today?

COMPANY LIQUIDITY 1955–56

In 1955 and 1956, company profits as a whole, other than in insurance, banking and finance, continued to rise, but at a slackening pace. According to the latest Blue Book on National Income and Expenditure, gross company income, excluding

TABLE I

Company Income and Capital Investment

	1953 £m	1954 £m	1955 £m	1956 £m
Gross Income, excl. stock appreciation	2,789	3,051	3,281	3,404
Less Dividends, interest and taxation paid	1,654	1,676	1,918	1,924
Retained Income	1,135	1,375	1,363	1,480
Gross Fixed Capital Formation in U.K.	679	775	976	1,151
Value of Physical Increase in Stocks	66	195	365	206
Gross Capital Formation in U.K.	745	970	1,341	1,357
Net Increase in Financial Assets *plus* Net Overseas Investment	390	405	22	123
of which: Increase in Tax Reserves	9	96	—20	157

Source: *National Income and Expenditure 1957* (Table 28)

stock appreciation, increased by 8 per cent. in 1955 but only by 4 per cent. in 1956. The money value of the capital investment undertaken by companies in this country, including that in stocks and work in progress, rose even faster—by 38 per cent. in 1955; and although it then levelled off in 1956, owing largely to a reduction in the rate of stock-building, the effect of the boom was to oblige companies as a whole to draw on their surplus liquidity in 1955 and, to a lesser extent, in 1956.

These events are illustrated in Table I. The Blue Book is unable to identify overseas investment by companies treated as resident in the United Kingdom, so that the observation that liquid assets continued to be depleted in 1956 is not necessarily inconsistent with the fact that the balance of retained income over gross capital formation in the U.K. remained positive. It is worth noting that the balance for 1956 is smaller than the attributed increase in tax reserves (that is, the increase in taxation liabilities not yet paid).

More detailed evidence of the course of the liquidity of public companies is provided by *The Economist's* summary of published balance sheets, as indicated in Table II.

TABLE II

Liquid Assets of a Sample of Companies, 1955–56

	Accounts Published:					
	1st Half 1956		2nd Half 1956		1st Half 1957	
	£m	% *Change from Previous Year*	£m	% *Change from Previous Year*	£m	% *Change from Previous Year*
Cash & Tax Reserve Certificates	641	— *5*	300	—*15*	651	— *6*
Gilt-edged Securities	152	+*23*	55	— *5*	147	— *6*
Gross Liquid Assets[1]	793	— *1*	355	—*14*	798	— *6*
Less Bank Advances	296	+*16*	132	+*23*	350	+*25*
Net Liquid Assets	**497**	— *9*	**223**	—*27*	**448**	—*21*
Number of Accounts	984		707		960	

[1] Marketable securities other than gilt-edged are excluded from liquid assets, contrary to conventional practice, for they should perhaps in this context be regarded not so much as assets available to meet immediate liabilities as investments held for purposes of long-term income. The general picture would not be appreciably different if the conventional basis were adopted.

Source: *The Economist*. The figures in this and the following tables relate to companies excluding oil, rubber, tea, canals and docks, finance and land, hotels and restaurants and warehousing concerns.

COMPANY LIQUIDITY INCREASING AGAIN?

The decline in company liquidity promised to bring the company sector within more effective range of the Chancellor's monetary weapons, for it implied that, in the absence of a more rapid rise in profits, companies would have to rely to a greater extent on the banking system and on the new issues market in order to finance even the existing level of capital investment. A rise in the level of working capital required as a result of an increase in wage rates would drain away company liquidity still further.

The picture revealed by the company accounts tabulated by *The Economist* in the third quarter of 1957, however, and which is reproduced below, is in this respect a more disturbing one, for it indicates that in the early part of 1957 public companies were rebuilding their liquid assets. The question must be asked whether the company sector may have been drifting back to a situation in which it is insensitive to a policy of credit restraint in the form of the over-all stabilization of bank advances.

TABLE III

Company Liquidity and 433 Reports Issued in July-September 1956 and 1957

	1956 £m.	1957 £m.	% *Change*
Cash	149	160	+ 7
Gilt-edged Securities	29	30	+ 3
Gross Liquid Assets	178	190	+ 6
Less Bank Advances	87	99	+14
Net Liquid Assets	**91**	**91**	–

An examination of the industrial categories into which *The Economist's* figures are arranged reveals no single cause of this increase in cash holdings, but some case can be made out for concluding that this reversal of the previous decline in the liquidity of public companies might not be temporary. A sample of 200 company reports summarized by the *Exchange Telegraph Co.* and relating to financial years ending 30th June, 1957, and after, (too late to be included in *The Economist's* figures for reports published in the third quarter of 1957) reveals an increase in cash balances of 10 per cent. These

figures do not, of course, take account of company liabilities against which cash and gilt-edged securities may have to be held, but there are several reasons for thinking that the accumulation of liquid assets has indeed continued in the case of many companies.

First, whatever may be the problems that lie ahead, the evidence points to an improvement in company income over the past year, at least (see Table IV). Generally, production has been increasing, and those industries whose adverse experience halted the rise in profits in the aggregate in 1956 and the early months of 1957—especially motor vehicles, household goods and cotton textiles—have for the most part since enjoyed a notable recovery. The pressure on profit margins has been moderated by the fall in raw material prices since the Suez crisis. The index numbers of wholesale prices published by the Board of Trade show from June to October, 1957, an increase over the previous year in the prices of manufactured products (other than fuel, food and tobacco) of approximately 3 per cent., whereas the prices of basic materials (excluding fuel) used in non-food manufacturing industry were a shade lower than a year earlier. If industrial conditions become more competitive, selling prices will no doubt move downwards with material costs, but many industries seem to have been able to continue pricing on an original cost basis over this period.

Secondly, the fall in raw material prices will free liquid

TABLE IV

The Growth in Public Company Income

Reports Published In	Percentage Change Over Year In:				
	Gross Trading Profits %	*Total Income* %	*Retained Income (Approx)* %	*Net Equity Earnings (Approx)* %	*Net Ordinary Dividends* %
1956 1st Quarter	+12·4	+12·2	+18·9	+19·4	+15·0
2nd „	+11·5	+11·3	+12·9	+13·1	+12·4
3rd „	+ 7·3	+ 7·9	+ 9·5	+ 6·3	+ 7·4
4th „	+ 2·7	+ 1·2	— 2·5	— 5·7	+ 5·6
1957 1st „	+ 0·9	+ 0·4	— 5·3	— 5·6	+ 6·6
2nd „	+ 4·9	+ 4·4	+ 2·0	— 1·8	+ 4·2
3rd „	+ 5·7	+ 5·1	+ 1·5	+ 0·5	+ 7·3

Source: *The Economist.*

resources previously employed in stock-holding. Apparent profits shown in company accounts appearing in 1958 may be depressed owing to a fall in stock appreciation in most cases and to the experience of book stock losses in some; but the more favourable course of true profits adjusted for these book items should be reflected in company liquidity, as in the period following the collapse of raw material prices after the Korean boom.

Thirdly, companies are no longer adding to their fixed assets at the pace of 1955–56. The survey of investment intentions conducted by the Board of Trade records that companies in manufacturing industry expect to spend rather less on fixed investment in 1958 than in 1957. At the same time, however, depreciation provisions continue to rise at a fairly rapid rate for, owing to the heavy investment of the last few years, the gap between depreciation on a replacement cost and that on an original cost basis has been narrowing.

Finally, in the first half of 1958, at any rate, the inflow of funds from new capital issues will be high. One of the remarkable features of this whole period is the fact that, despite a succession of official warnings that it would become more difficult to obtain the consent of the Capital Issues Committee, the volume of money raised in the new issue market has continued to increase. (See page 48).

TABLE V

Applications For New Issues—Approvals of "New Projects" by The Capital Issues Committee

	£m.
1954	329
1955	463
1956	569
1957 (estimated)	850

In Table V, an estimate has been made of C.I.C. approvals for the year 1957 on the basis of the figures published for the first three quarters of the year. It is true that the proportion of applications formally refused by the Capital Issues Committee rose progressively during 1957. On the other hand, the fact that in the first three quarters of the year the Committee found itself obliged to approve applications totalling some 50 per cent. more than a year earlier indicates the weakness of this

particular method of denying finance for inflationary expenditure. An increase in the volume of new issues of this order could hardly have been generally expected to follow the Chancellor's instructions to the C.I.C. to confine its approval to so-called essential and urgent projects.

In an economy that devotes nearly one-quarter of its production to exports and a further substantial proportion to defence and basic materials and services, it is not really surprising that *qualitative* discrimination according to ill-defined criteria is an inadequate means of restraining the *quantity* of planned investment. Direct controls over finance have proved as ineffective, and for similar reasons, as those over materials in earlier post-war years.

The approval of applications by the C.I.C. in 1957 will add to the liquid resources of companies over part of 1958, as most companies naturally raise in one block funds that they intend to spend over some period ahead, which may be a matter of years. It is true that part of the proceeds of new issues may be used to repay bank loans, but the funds released may then be available to permit new lendings in other directions.

COMPANIES AND THE FINANCE OF WAGE INCREASES IN 1958

A recovery in the level of liquid assets possessed by companies is not in itself proof of their ability to finance a continued increase in working capital arising from further wage awards. Current liabilities, in the form of trade creditors, taxation and outstanding interest and dividends, have been increasing even faster, so that the ratio of liquid assets to these has been falling ever since 1954. This is shown in Table VI overleaf, where third quarter reports only have been recorded, in order to avoid seasonal distortions.

Even when all this is taken into account, no clear answer can be given to the question whether wage increases unmatched by productivity can now be financed only at the cost of reducing output, which is now the intention of government policy. The point of importance is the view taken of their companies' liquid resources by boards of directors, on which some evidence is available in the course of the ordinary dividends declared by public companies. The rise in dividends in 1956–57—a period in which company reports were actually recording a fall in net equity earnings due to the rise in taxation and depreciation provisions—suggests that directors have not been greatly concerned at the deterioration in their companies' net liquidity. However, lack of information relating to those companies not

covered by *The Economist's* tabulation, together with the general impression given by the record of published reports that the experience of companies has been growing more diverse, makes it difficult to generalize. Company liquidity is probably less evenly distributed than at the beginning of 1955.

TABLE VI

Liquid Assets and Current Liabilities of Public Companies

Accounts Published July–September	No. of Accounts	Ratio of Gross Liquid Assets to:		
		Creditors	Other Current Liabilities[1]	Total
		%	%	%
1954	360	—	—	64·9
1955		—	—	55·9
1955	530	—	—	50·2
1956		62·4	128·1	42·0
1956	433	59·8	135·3	54·1
1957		58·3	128·1	40·1

[1] Excluding bank advances.

Source: *The Economist.*

To the extent that company liquidity has been sustained by bank accommodation, the stabilization of bank advances would no doubt exercise some measure of restraint. But the contribution of bank lending to the inflation of the past two years is easily exaggerated; by August, 1957, the total of bank advances was still 7 per cent. below that of two years earlier. It is true that the accounts tabulated by *The Economist* indicate that many public companies, whose rôle in exports and other essential activities has enabled them to claim priority, continued to receive an increase in bank accommodation in 1956 and 1957. But as Table VII shows, this has played a relatively small part in the expenditure of the aggregate of companies in *The Economist's* sample. Those companies whose accounts were published in the third quarter of 1957 recorded a rise in bank accommodation equivalent to less than one-tenth of their apparent expenditure on additions to stocks and fixed assets. Table VII shows very approximately how the increase in the assets of companies whose accounts are tabulated by *The Economist* has been financed in recent years.

It is clear that retained income and new issues are the chief sources of finance of the growth in company expenditure; and

TABLE VII

Sources and Uses of Public Company Funds

	Reports Published 1st Half 1956	Reports Published 2nd Half 1956	Reports Published 1st Half 1957	Reports Published 3rd Qtr. 1957
	% of Increase in Total Assets Over Previous Year			
Gross Physical Investment	81	96	93	76
Increase in Liquid Assets	—1	—13	—5	6
Increase in Debtors	20	16	9	15
Increase in other Assets	—	1	3	3
Increase in Total Assets	100	100	100	100
	% of Increase in Total Liabilities Over Previous Year			
Depreciation	21	21	22	21
Retained Profits	25	27	26	27
Increase in Nominal Capital	28	19	19	17
Increase in Bank Advances	3	6	7	5
Increase in Current Liabilities	15	18	14	16
Increase in Other Liabilities	8	9	12	14
Increase in Total Liabilities	100	100	100	100

Source: *The Economist.*

in view of the increase in the level of new issues, the most important threat to company liquidity lies in the danger that profits will fall. It would be misleading, however, to predict that the government's policy will succeed *because* it will depress profits, for profits will be checked by these measures only *if* they achieve a deflationary impact.

The crucial question remains whether companies believe they will be able to match higher wage costs with higher selling prices. If we lived in a cash-and-carry economy, an increase in working capital necessitated by higher wage rates and not by an increase in the volume of investment might be financed simultaneously by a rise in prices. In practice, a rise in the wage and salary bill would not be followed by a corresponding rise in cash receipts for some time, owing mainly to the provision of short-term credit to customers. This is, however, a relatively small and temporary gap, and in those cases where companies lacked liquid resources for this purpose, the ability to bridge the gap would depend on whether the banks were willing to make temporary advances, which would not necessarily be

inconsistent with the Chancellor's request for stability over the year 1957–58 as a whole. If companies were able to raise their prices, of course, the cost of wage increases would be financed ultimately by consumers, if necessary out of their own cash balances.

LOCAL AUTHORITIES, FINANCE COMPANIES AND BUILDING SOCIETIES

The use of cash balances also plays its part in the finance of expenditure by local authorities, finance companies and building societies. In 1957, local authorities continued to draw on the new issue market, the mortgage market and on temporary deposits in order to replace funds previously supplied from the Exchequer. Mortgages and temporary deposits have played larger rôles than new issues of marketable securities. All are financed partly from the cash balances of persons, institutions and even of industrial companies, as well as from current saving.

In 1956, judging by official estimates relating to the first half of the year, local authorities may have raised £300 millions in the form of mortgages, but according to market sources the unwillingness of many local authorities to pay high mortgage rates brought about a distinct reduction in the amount of money raised in this form last year. On the other hand, there was a much greater increase in the volume of funds raised in the temporary money market, so that in total there was a rise in the quantity of external finance secured.

During 1957 there seems to have been some reversal of the fall in bank advances to hire-purchase finance companies. The quarterly analysis published by the British Bankers' Association reveals an increase of nearly one-third between August, 1956, and August, 1957; although this was not enough to bring the level back to its 1955 peak. But with the recovery in the demand for consumer durables and a strong demand for plant and equipment to be financed in this way, finance companies have been offering high rates of interest to attract deposit money, rates of 8½ per cent. being common.

Around these finance companies there has developed, in effect, a secondary market for finance, in which some industrial concerns have apparently been willing to borrow on short-term at rates well in excess of those charged on ordinary bank advances. The restriction of "non-essential" borrowing applied by the banks may thus have been to some extent evaded. In

this way, too, one venerable concept of monetary theory now seems to be growing increasingly academic: the so-called fringe of unsatisfied borrowers, unable to obtain funds because of the unwillingness of the banks to lower their standards of credit-worthiness in return for higher rates of interest. As yet, this secondary financial market may be quantitatively unimportant, but it is one more example of the way in which institutional rigidities can be overcome in the most adaptable capital market in the world.

The eventual implications of the development of a really free market for short-term funds embrace many interesting possibilities for both monetary and banking policy. It is because of the existence of these unsatisfied borrowers that economists—and the authorities—have been able to distinguish between a policy aimed at checking inflation by restricting the supply of finance, i.e. by credit "rationing", and one that achieves the same object by raising interest rates. This is a distinction that will become untenable if the field of "industrial banking" spreads and the rate of interest, rather than credit rationing, comes to determine the marginal investment project.

One example of credit rationing, however, persists in the case of the building society movement, which prefers to hold both the rates of interest at which it borrows and those at which it lends as stable as possible. The increase in the yields available on alternative outlets for saving led to a marked rise in withdrawals in 1955–56, with the result that building societies were obliged to curtail their new lending, although many would-be house purchasers were prepared to pay higher interest charges. This restriction of finance cannot have been unconnected with the fall in the number of houses on which construction was begun for private owners, from 130,000 in 1955 to 123,000 in 1956. In October, 1956, the movement raised its borrowing rates sufficiently to check the outflow of funds; and although its new mortgage rates were increased to a 6 per cent. basis the demand for advances did not abate. The net inflow of funds raised on shares and deposits, and the rising stream of repayments of principal and interest receipts, enabled the movement to increase its new mortgage lending by 8 per cent. in the first three quarters of 1957, and the number of houses started for private owners over this period increased by 4 per cent.

Even before the increase in Bank Rate in September, some building societies felt themselves obliged to react to the pressure of demand by reducing the proportion of the purchase price which they were prepared to advance. Since September

19th, the increase in interest rates on government securities and on deposits with local authorities and finance companies is thought to have reduced the net inflow of funds once more, but almost up to the end of the year only a few of the smaller companies had increased their rates to match the still unsatisfied demand for their funds.

TABLE VIII

Building Societies: Quarterly Receipts and Withdrawals[1]

	Shares and Deposits			*Mortgages*	
	Received £m.	*Withdrawn* £m.	*Net Inflow* £m.	*Repayments & Interest* £m.	*Advances* £m.
1955 1st	98	59	39	61	83
2nd	82	60	22	67	101
3rd	108	73	35	68	94
4th	104	67	37	72	80
1956 1st	99	76	23	66	75
2nd	86	72	14	67	77
3rd	97	73	24	69	70
4th	93	65	28	74	73
1957 1st	105	74	31	69	73
2nd	96	65	31	76	91
3rd	101	73	28	79	95

[1] Figures published by the Building Society Association and relating to over 200 societies representing more than 90% of the total assets of the movement; the statistics also include those of the Halifax Society, which left the Association at 30th September, 1956.

THE GENERAL QUESTION OF LIQUIDITY

In relation to the national income, the stock of money in existence is now as small as it has been since 1921, the excessive liquidity of the economy that was created by war finance having been absorbed largely by inflation itself. It does not follow that the present level of money balances held in the economy as a whole is at last too low to finance an inflationary expansion of the flow of money expenditure.

First, much depends on how far the cash is held by those who intend to spend it. A policy aimed at preventing inflation by holding down the over-all level of money, or by damming its flow, will have a smaller chance of success if those who wish to spend—whether on consumption or capital formation—are relatively liquid, even if others are not. Obviously, the state of the business sector is crucial in this respect; if businesses are abundantly liquid, monetary weapons are likely to be less effective than taxation policy as a corrective.

Secondly, some tendency can be discerned to over-simplify the purposes for which money is held. *The Economist*, for example, declares that "obviously, there is a limit beyond which the rate of money turnover will not be pushed: a minimum volume of working balances is necessary for any given level of economic activity".[1] This is undoubtedly true, but it would be incorrect to infer that the need for a "working balance" is the most important function of money, quantitatively speaking, or that the present ratio of money stock to national expenditure is at this absolute minimum.

Only part of the total stock of money is held as a working balance. The important question is whether those who hold money in excess of this are prepared to part with it to enable others to maintain their working balances or to spend in excess of their current saving, in return for near-money assets, such as short-term claims on local authorities, building societies or finance companies, or for longer-term securities. Persons hold approximately £2,000 millions of net bank deposits, (i.e. deposits less advances), equivalent to nearly 30 per cent. of gross incomes other than wages and National Insurance benefits. This proportion seems well in excess of any requirement by way of a minimum working balance, and the bulk of these deposits are held by the relatively wealthy, who can doubtless be induced to part with them in exchange for securities if offered sufficiently attractive terms.

To sum up, there seems to be insufficient evidence to show that the economy as a whole has approached the point at which, in relation to the current level of money expenditure, the existing stock of money will only just suffice to meet working balance requirements. If companies and other spenders, such as local authorities and hire-purchase companies, do require external finance to supplement their internal resources, there remains available a large pool of idle balances which can be drawn on as long as spenders and lenders can agree to terms. The government's recognition of this is implicit in its continued control over the new issue market.

Inflation cannot be halted unless a check is applied to the stock of money. But there is a distinction between a condition necessary for success and one that is sufficient to secure it. The rationing of funds with the help of the banking system and the Capital Issues Committee only partially constricts the flow of finance. The limitation of the total quantity of money, or the

[1] *The Economist*, 23rd November, 1957.

level of bank advances in particular, will end inflation only if the expectations of the business world (including for this purpose the local authorities and other public bodies) are not such as to induce those who are short of finance to pay the price necessary to obtain it.

In this regard the measures of September 19th differ in two vitally important respects from those which failed in 1955 and 1956. First, high interest rates are naturally a more serious deterrent when the force of the capital investment boom can be seen to be running out, when commodity prices are uncertain and when export markets may be adversely affected by an American recession. Secondly, the government's actions must be considered as a whole. The rise in Bank Rate to the highest level for a generation, the tighter control now to be exercised over the capital expenditure of the public sector and the government's refusal to finance wage increases in the nationalized industries are important both in themselves and as evidence of a new resolution.

It is now clear beyond doubt that neither politically nor economically can the government continue to tolerate the inflation that its lax control over the quantity of money allowed to develop nearly four years ago. Its previous actions were ineffective partly because its will to end inflation failed to carry conviction. If at last the determination of the government is plain, its latest measures carry the substance of an effective policy where their predecessors threw only the shadow.

H. B. Rose.

London.
December, 1957.

The Sources of Invention

By John Jewkes

I

It seems to be almost universally assumed that the launching of the space satellites was made possible only by employing vast teams of technicians working together in large research institutions under close central guidance and with unlimited resources and equipment. This may be true, although nobody in the Western world can actually know that it is so. Any suggestion that the difference between failure and success might have resulted from a path-breaking discovery by some worker not in a large institution and perhaps not even interested primarily in high-altitude rockets would, nearly everywhere, be instantly dismissed as ludicrous. All this is indicative of the degree to which we are now dominated by the doctrine that technical progress can come only from mass attacks upon set problems.

In fact, a glance at the history of the high-altitude rocket hardly supports such a theory. Some of the more important early scientific writings on this subject, published in 1903, were those of a Russian schoolmaster, K. E. Ziolkowsky. He made many fundamental contributions to rocket technology. (Russia was probably further ahead of other countries in thought and work on rockets in 1903 than now). Perhaps the most important scientific contribution to rocket theory, however, was made by Hermann Oberth, a teacher of mathematics in Transylvania, who in 1923 published his classic *By Rocket into Interplanetary Space*. Between the two world wars practical interest was maintained by a group of young German amateurs, some of whom were destined to become later outstanding figures in this field. During the war the German military authorities took up the development of the rocket and finally produced the V2, which covered a distance of 120 miles with a deflection of only 2½ miles from the target, reached a speed of 3,000 miles per hour and a height of nearly 60 miles. When Germany was finally overrun the Peenemünde experts were scattered. Some went to the United States and Britain, more finished up in Russia. Considering the rapid progress made by Germany in a relatively short period during the war, the development of

The author is Professor of Economic Organization in the University of Oxford.

high-altitude rockets since that time seems to have been fairly slow everywhere; for by 1945 there was no doubt that a satellite could be placed in the sky by the use of rockets and there was no great mystery about how, in general, this could be done. The fundamental discoveries in regard to high-altitude rocket propulsion, as distinct from the refinement and development of these ideas, were made by independent enthusiasts working with limited resources under discouraging conditions and for long ridiculed or ignored by the main bodies of organized science and technology.

II

Even, however, before atomic energy and the sputniks, new notions had been gaining ground about how inventions could best be stimulated and how scientists and technologists might be employed to the best effect. (These ideas began to be strongly advocated only during the 1930's. Before that time, it will be recalled, it was commonly believed that the problem of production was solved and that the distribution of wealth was the important task to be dealt with; that technical progress was perhaps going on too quickly and that scientists and technologists were probably doing more harm than good in the world). The new doctrines really amount to a claim that the world has suddenly become a different kind of place, that the lessons of the past have largely become irrelevant and that we must all now adjust ourselves and our thinking accordingly. This "modern" view can be summarized as follows. In the nineteenth century, most invention came from the individual inventor who had little or no scientific training and who worked largely with simple equipment and by empirical methods and unsystematic hunches. The link between science and technology was slight. In the twentieth century, the argument runs on, the characteristic features of the nineteenth century are rapidly passing away. The individual inventor is becoming rare; men with the power of originating are largely absorbed into research institutions of one kind or another, where they must have expensive equipment for their work. Useful invention, in particular, is to an ever increasing degree issuing from the research laboratories of large firms, which alone can afford to operate on an appropriate scale. There is increasingly close contact now between science and technology. The consequence is that invention has become more automatic, less the result of intuition or flashes of genius and more a matter of deliberate design. The growing power to invent, combined with the

increased resources devoted to it, has produced a spurt of technical progress to which no obvious limit is to be seen.

In this article are set down some of the results of an enquiry, shortly to be published in full,[1] designed to test these opinions against the observable facts. It was hoped in this way to make some contribution to a better understanding of the dynamics of industrial societies. The study, it must be repeated, covered a period before atomic energy and space satellites. It may be that these latest spectacular discoveries, and the circumstances in which they have arisen, rob earlier experience of all pertinence for thinking about the future. I personally have doubts about this but I cannot enlarge upon them here. Further, the study was confined to *inventions* as contrasted with the *development* of those inventions; it was concerned with the early crucial periods of radical innovation and not the later stages of improvement and exploitation of the original discoveries. It is, of course, impossible to draw a sharp dividing line between the two. On the other hand, it would be futile to deny that some new ideas are more revolutionary than others, that certain conceptions start a long chain of consequential improvements and that, unless the flow of these seminal ideas can be maintained, technical progress will finally come to a stop.

III

The first task was to pick out a group of twentieth century inventions which might be regarded as a fair cross-section of the technical progress of the past fifty years; to make as detailed a study as possible of the conditions under which they had arisen and, in particular, to try to identify the respective parts played by individual inventors, the research activities of firms of varying size, of universities and of other institutions where research is conducted. A list of about sixty inventions was studied, ranging from acrylic fibres to the zip fastener, from air conditioning to xerography.[2]

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[1] *The Sources of Invention* by J. Jewkes, D. Sawers and R. Stillerman. Macmillan. Jan, 1958.

[2] Acrylic Fibres, Air Conditioning, Automatic Transmissions, Bakelite, Ball-point Pen, Catalytic Cracking of Petroleum, Cellophane, Cellophane Tape, Chromium Plating, Cinerama, Continuous Casting of Steel, Continuous Hot Strip Rolling, Cotton Picker, Crease-Resisting Fabrics, Cyclotron, DDT, Diesel-Electric Railway Traction, Domestic Gas Refrigeration, Duco Lacquers, Electric Precipitation, Electron Microscope, Fluorescent Lighting, Freon Refrigerants, Gyro-Compass, Hardening of Liquid Fats, Helicopter, Insulin, Jet Engine, Kodachrome, Krilium, Long-Playing Record, Magnetic Recording, Methyl Methacrylate Polymers, Modern Artificial Lighting, Neoprene, Nylon and Perlon, Penicillin, 'Polaroid' Land Camera, Polyethylene, Power Steering, Quick Freezing, Radar, Radio, Rockets, Safety Razor, Self-winding Wrist Watch, Shell Moulding, Silicones, Stainless Steels, Streptomycin, Sulzer Loom, Synthetic Detergents, Synthetic Light Polariser, Television, 'Terylene' Polyester Fibre, Tetraethyl Lead, Titanium, Transistor, Tungsten Carbide, Xerography, Zip Fastener.

The clearest conclusion emerging from the enquiry was that simple generalizations are not possible. The important twentieth century inventions have arisen in all sorts of ways and through the activity of all the different possible agencies. More than one half of the cases can be ranked as individual invention in the sense that much of the pioneering work was carried through by men who were working on their own behalf without the backing of research institutions and often with limited resources and assistance or, where the inventors were employed in institutions, these institutions were, as in the case of universities, of such a kind that the individuals were autonomous.

The jet engine was invented and carried through the early stages of development almost simultaneously in Great Britain and Germany by men who were either individual inventors unconnected with the aircraft industry or who worked on the airframe side of the industry and were not specialists in engine design; the aircraft engine manufacturers came in only after much pioneering had been carried on. The gyro-compass was invented by a young man who was neither a scientist nor a sailor but had some scientific background and was interested in art and exploration. The process of transforming liquid fats by hardening them for use in soap, margarine and other foods was discovered by a chemist, working in the oil industry, who pursued his researches, and his efforts to get the process adopted, single-handed. The devices which made practicable the hydraulic power steering of motor vehicles were primarily the work of two men, one of whom worked strictly on his own, while the other was the head of a small engineering company. The foundations of the radio industry were laid by scientists; but the majority of the basic inventions came from individual inventors who had no connection with established firms in the communications industry or who worked for, or had themselves created, new small firms. In the case of magnetic recording, the early crucial invention came from an independent worker, as did a number of the major inventive improvements; the interest of the companies arose much later. The first successful system for the catalytic cracking of petroleum, which opened up the way for many later advances, was the product of a well-to-do engineer who was able to sell his ideas for development to the oil companies.

The history of the evolution of the cotton picker reveals two main lines of progress: in each case, individual inventors working with limited resources were able to take their ideas to the point where large firms were prepared to buy or license

their patents for subsequent development. Bakelite, the first of the thermosetting plastics, was produced by a brilliant sole investigator. The first, and still the most important, commercially practicable method of producing ductile titanium was conceived of by a metallurgist working in his own laboratory. In the application of automatic transmissions to motor vehicles, the credit for mechanical novelty has to be shared between individual inventors and companies, but the former should probably rank above the latter; actually, the ideas of a shipbuilding engineer lie behind much of the modern progress, but both in Britain and the United States inventors working single-handed have contributed a great deal to the present-day mechanisms. Up to 1938, only one large aircraft manufacturer had taken much interest in the helicopter and even that only as the result of the personal interest of the head of the firm; the progress was made by the enthusiasm of individual inventors, usually with limited resources, obtaining backing in unlikely quarters in a manner which would parallel the many stories of "heroic" invention in the nineteenth century. And, to mention one or two inventions from the field of consumer goods, the groundwork for the successful Kodachrome process was laid by two young collaborators, both musicians, whose ideas were taken up by a large photographic firm; the safety razor came from two individuals who struggled through financial and technical doldrums to great success; the zip fastener came from the minds of two engineers and was only taken up for large-scale production many years later; the self-winding wrist watch was invented by a British watch repairer.

The list next contains several important inventions emerging from firms which were small or of only moderate size. Terylene was discovered by a small research group in the laboratory of a firm which had no direct interest in the production of new fibres. The continuous hot strip rolling of steel sheets was conceived of by an inventor who might well be considered an individual inventor and perfected in one of the smaller American steel companies. The crease-resisting process emerged from a medium-sized firm in the Lancashire cotton industry. Cellophane tape was the product of what was virtually a one-man effort in a then small American firm. The virtues of DDT were found by a Swiss chemical firm which, for that industry, was of modest dimensions.

Some outstanding successes arose out of the research of very large firms. Nylon was discovered by a small research group, headed by an outstanding chemist, in the laboratories of du Pont. Slightly later another very large firm, I.G. Farben-

industrie, produced and developed a similar fibre, Perlon. Several firms, all large, in Germany and the United States have devised methods of producing successful acrylic fibres. Freon refrigerants and tetraethyl lead were both produced in General Motors by small groups under Midgley and Kettering; the cases are interesting in that a motor engineering firm made these two important contributions in the chemical field and in that their discovery involved a strong element of chance. In the story of television, one outstanding figure was an employee of the Radio Corporation of America, but a number of the crucial inventions were made by a second American inventor who worked independently; and the first complete system for television broadcasting was created for the British Broadcasting Corporation by a British firm of modest size. The transistor was produced in the Bell Telephone Laboratories, a case which comes nearer than most to research directed towards a predetermined result. Polyethylene was discovered, in the course of some very broad scientific studies and as the immediate outcome of a fortunate accident, in the laboratories of Imperial Chemical Industries and developed by them; but methods of producing polyethylene at low pressures were later discovered at about the same time in one of the Max Planck Institutes in Germany and by American companies. Krilium was the discovery of research workers in the Monsanto Chemical Company, the result being attained by a combination of chance and a systematic search of a very wide field. In the discovery of the methyl methacrylate polymers, known variously as Perspex, Lucite and Plexiglas, two large firms were primarily involved: I.C.I. and Röhm & Haas; but an independent research student appears to have made an important contribution. The diesel-electric locomotive probably embodied less inventive effort than many of those mentioned above; it represented the development by European and American firms, and especially by General Motors in the United States, of nineteenth century inventions. The recent remarkable growth in the use of silicones represents the discovery of practical applications for compounds produced by a British university scientist, the usefulness of which was first realized by scientists in an American company. The discovery of Neoprene is a romantic story in which a priest, occupying a chair in chemistry in an American university, was responsible for observations which were taken up by a large chemical firm and carried much further by them to a successful conclusion.

Finally, some of the cases quite defied classification: where a research worker in an industrial laboratory produced an

invention outside his own professional field; where an individual inventor and a company reached much the same results at the same time; where a government research station, an industrial company, scientists in the universities and individual inventors all made important contributions to the final result, and so on. Such cases, of course, heighten the impression of a picture which admits of no simple explanation.

The cases taken as a whole reveal that no one country has a monopoly of inventive power. The outstanding names and groups are widely spread over many industrial countries. One significant exception is that, in none of the sixty cases studied, had contributions been made by Russian workers subsequent to the Revolution. Before that date, numerous names of distinguished Russian contributors crop up: the early Russian work in rockets has already been mentioned; in the early efforts linked with television occurs the name of Rosing; Zworykin, who later on in the United States was to make one of the vital contributions to the perfection of television, acquired his interests in this field in St. Petersburg before the first world war; Sikorsky, the great American helicopter pioneer, had in fact built two helicopters in Russia as far back as 1909. But, after the Revolution, it seems clear that Russia made no important contributions in radar, television, the jet engine, the antibiotics, the man-made fibres, the newer metals, the catalytic cracking of petroleum, the continuous hot strip rolling of steel, silicones or detergents, until others had shown the way and revealed what could be done.

IV

The twentieth century has, therefore, been much enriched by many inventions attributable to men who have worked under the kind of conditions associated, by long tradition, with the "heroic age" of invention in the nineteenth century. The next step in the enquiry was to look once again at what happened during the last century. Was this an age when uneducated inventors, ignorant of science, working in isolation in garrets and cellars, blindly and unsystematically tried one thing after another and occasionally stumbled by accident upon something worth while but were invariably robbed of their due rewards by predatory financiers? Such a picture seems to be a travesty of the facts. The links between science and inventive technology were often close. There were many distinguished scientists who were also important inventors: Kelvin, Joule, Davy, Dewar, Hofmann, Bunsen, Babbage and Playfair. It was frequently true that those inventors who were not formally

trained in science showed a high respect for scientific knowledge and an anxiety to acquire it. James Watt spent much of his time with the most distinguished scientists of the day; Charles Parsons was a university graduate and the son of a President of the Royal Society; Trevithick, of the high pressure steam engine, consorted with members of the Royal Society; Cartwright was a Fellow of Magdalen College; Henry Maudsley was a close friend of Faraday; Wheatstone and Morse were professors; W. H. Perkin was a student at the Royal College of Chemistry; Edison made use of the Princeton University laboratories and worked closely with many scientists; C. F. Cross, the inventor of the viscose process, was a consulting chemist. This is to mention only some of the more famous names; the list could be greatly extended of nineteenth century inventors with similar scientific contacts and interests.

Many of these men collaborated in ways which, in these days, would be dignified as team-work. Nor is it the whole truth that invention in the nineteenth century was merely empirical and accidental whilst that of the twentieth century has become scientific. It is far too large a subject to be argued in full here, but it is at least a tenable view that there has been just as much "accidental" invention and discovery in the present century as in the last.

The evidence, therefore, suggests that much of the history of invention written up to the present day, by somewhat distorting the picture of what occurred in the nineteenth century and by then distorting it in the opposite sense for the twentieth century, has exaggerated the fundamental differences between the two periods and has understressed the continuity which runs through the whole story. Perhaps the world, in the matter of technical progress, is not such a new place as it is sometimes made out to be.

V

It was not the purpose of the enquiry to concern itself with policy; for what is needed, first and foremost, for a better understanding of the forces which influence the flow of innovations is more evidence in a field of study up to now sadly neglected. But the findings have some bearing upon major questions to which industrial societies ought properly to be addressing themselves.

We are in these days caught up in a great boom in industrial research and development which, in its present intensity, may be transient and in some ways artificial. It has been greatly stimulated by defence needs in the past year or

two. It has been fostered by what are probably over-sanguine views about the value of science and technology in increasing the profits of individual firms or in raising general standards of living. But even when full allowance has been made for all this, there still remains a strong and newly-found belief that, by taking thought, it ought to be possible to increase the flow of new and useful technical and scientific ideas and to make fuller and more rapid use of them for material improvement. The policies which, in consequence, are being pressed have already been referred to. The maximum number of people should be given a basic training in technical matters; the different specialists must be encouraged or forced to share their knowledge and ideas in co-operative teams; scientists and technologists should be employed in large research institutions where, secure from the vicissitudes of the life of the independent inventor and provided with ample equipment, guidance can be given to the main lines of their interests. That, in fact, is what is happening in varying degrees everywhere. In Russia, we are informed, the whole body of scientists and technologists pursue their labours within a framework of purposes laid down by the central authority, benign but all-seeing. But, even in the Western world, the institutionalization of research and invention is going on apace. A steadily increasing proportion of those with scientific and technical training are now employed under conditions in which they are not free to follow their own bents and hunches, they are tied men. In some countries, even the autonomy of the universities is being threatened by their heavy dependence upon *ad hoc* grants for work on specified tasks.

Are these conditions most favourable to the flow of really new ideas? Or are they the conditions which, whilst perhaps increasing the number of minor improvements, will finally stifle originality? As John Stuart Mill once put it, the question is "whether our march of intellect be not rather a march towards doing without intellect, and supplying our deficiency of giants by the united efforts of a constantly increasing multitude of dwarfs." In trying to strike a balance here it is worth while looking at the side of the shield which in these days is so frequently ignored.

First, men with great powers of originality are in many ways a race apart. Like any other group, of course, they differ between themselves but on the whole they are constitutionally more averse to co-operation than the rest of us. "I am a horse for single harness" wrote Einstein, "and not cut out for landau or team-work". This follows because their great gifts arise

from the habit of calling everything, even the simplest assumptions, into question; because they are in the grip of inner compulsions which lead them to assume the right of deciding how their special powers should be employed and how best a task should be approached, to resent interference and to be thrown out of balance by it. Many of them are, by temperament, wholly unsuitable for work in any research institution which is formally organized. And, beyond that, it is even conceivable that, in many cases, their native powers of innovation might be weakened or destroyed by over-prolonged scientific or technical education.

Second, it seems to be possible to exaggerate the virtues of team-work. Of course, as knowledge grows and forces more specialization upon scientists and technologists, systems of communication between the specialists must be progressively strengthened. And it is true that in some directions in recent years small teams are tending to replace the individual worker, although this is often because the man of original powers is given more assistance for his routine tasks. It is, however, a far cry from the useful, voluntary collaboration of a few like-minded people to the popular conception of serried ranks of Ph.D's moving forward into the scientific unknown as an army guided by some common purpose. The working groups even in a large industrial research laboratory are normally small. The real moving spirits are few and the rest pedestrian, although of course useful, supporters. Quantity cannot make up for quality. The reasons for the limitation of team-work are obvious. Team-work is always a second best. There is no kind of organized, or even voluntary, co-ordination which approaches in effectiveness the synthesizing which goes on in one human mind. Because of the growing specialization, team-work undoubtedly is inescapable. But it carries with it a countervailing loss of power inevitable when several minds are groping towards mutual understanding. And the loss becomes the greater the larger the team and the less voluntary it is in character. Nor must it be overlooked that the members of a team must always go the same way; that the strength of a team may be determined by its weakest link; that friction even in small groups of men with original powers of mind is not uncommon; that all co-operation consumes time; and that a large team is essentially a committee and thereby suffers from the habit, common to all committees but especially harmful where research is concerned, of brushing aside hunches and intuitions in favour of ideas that can be more systematically articulated.

Third, it is erroneous to suppose that those techniques of large-scale operation and administration which have produced such remarkable results in some branches of industrial manufacture can be applied with equal success to efforts to foster new ideas. The two kinds of organization are subject to quite different laws. In the one case the aim is to achieve smooth, routine and faultless repetition, in the other to break through the bonds of routine and of accepted ideas. So that large research organizations can perhaps more easily become self-stultifying than any other type of large organization, since in a measure they are trying to organize what is least organizable. The director of a large research institution is confronted with what is perhaps the most subtle task to be found in the whole field of administration; a task which calls for a rare combination of qualities, scientific ability commanding the respect of colleagues and also an aptitude for organizing a group. There are many cases to support the conclusion that a large research organization may itself prove to be an obstacle to change. Ideas emanating from outside may be belittled or passed over. "Is not every new discovery a slur upon the sagacity of those who overlooked it?" And it will always be seductive for an established organization to take the smaller risks and more prudent routes when the rare and larger prizes are likely to be found in other directions.

VI

Here, then, is the dilemma which confronts any community trying to make the best of the native scientific and technical originality of its members. On the one side are the views of those, at the moment it seems in the majority, who conceive of the possibility of forcing the pace, as it was recently put by one research director:

> We find the self-directed individual being largely replaced by highly organized team attack in which we employ many people who, if left entirely to their own devices, might not really be research-minded. In other words, we *hire* people to be curious as a group . . . we are undertaking to *create* research capability by the sheer pressure of money . . .

On the other hand are the fears of those, at present much in the minority, who suspect that such forcing tactics will mean that we may frustrate the awkward, lonely, enquiring, critical individuals who, to judge by past experience, have so much to give but can so easily be impeded. To pose the question in concrete form: the last time that a new form of propulsion, the jet engine, came to be conceived it was pressed forward by

individual workers who had to meet frustrations and indifference, even resistance, on the part of established institutions. We are, presumably, not at the end of such innovations; there may be other new forms of motive power to come. And if, on some future occasion, the initiative comes in much the same way, do we resign ourselves to the idea that it must once again run the gauntlet of resistances from established interests? Are we further prepared to resign ourselves to the thought that, as research becomes more highly organized and the subject of institutional effort, any outside inventor will in the future have even less chance than in the past to force his ideas upon reluctant authority?

It may be that there are no clear-cut answers to such weighty questions. But the study of the inventions of the twentieth century would seem to support the following generalizations. Knowledge about innovation is so slender that it is almost an impertinence to speculate concerning the conditions and institutions which may foster or destroy it. But, in seeking to provide a social framework conducive to innovation, there would seem to be great virtues in eclecticism. If past experience is anything to judge by, crucial discoveries may spring up at practically any point and at any time. The only danger would seem to be in plumping for one method to the exclusion of others. In so far as society can usefully interfere, its task might well be to try to maintain the balance between the different sources of invention, to strive to prevent any one dominating to the exclusion of others. That country will, therefore, be happily placed which has a multiplicity of types of research agencies: the autonomous efforts of universities, government research organizations, industrial research associations, profit and non-profit seeking research institutes, the industrial research laboratories of firms of different size. And it would be well worth while to make efforts to guarantee that the independent inventor is not crowded out and that help and encouragement is available for him. As contrasted with the ideal ways of organizing effort in other fields, what is needed for maximizing the flow of ideas is plenty of overlapping, healthy duplication of efforts, lots of the so-called wastes of competition and all the vigorous untidiness so foreign to the planners who like to be sure of the future.

John Jewkes.

Merton College,
Oxford.
December, 1957.

The Free Trade Area through German Eyes

By Jossleyn Hennessy

The outstanding impression gathered in a recent tour to the Hague, Dusseldorf, Cologne, Bonn, Frankfurt, Zurich, and Paris, to study the problems of the European common market, was the striking difference between the British, German, and French approaches to these epoch-making proposals. The differences must, unless more widely understood, lead to increasing friction between Britain and the common market countries and could end in the failure of the negotiations, important, difficult, and delicate, that remain to be completed if the free trade area is to emerge, and if Europe is not to be reduced to chaos by two warring economic blocs.

British industrial, trade union, commercial and economic circles are intensely preoccupied by the British proposals for a free trade area and the completed plan for a European common market. This is evident from the amount of public discussion of these subjects, in pamphlets and special studies, on the air and in the press. When he crosses the North Sea, the first point that strikes the British observer, faced in his own country with a lengthy and ever increasing bibliography, is that the common market is hardly discussed at all in Germany. The literature on the subject is scanty. No chambers of commerce seem to be making special studies. Business and economic circles take it in their stride as but one among the many developments of contemporary public life.

The reasons for this are both political and economic. Of the two, all with whom I spoke in Holland, Germany, Switzerland and France, agreed that, if the economic reasons were by no means to be overlooked, the political were by far the more important.

THE SURVIVAL OF EUROPE

Conditioning the outlook of all Germans is the memory of defeat in two world wars. They argue that these catastrophes

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Mr. Hennessy writes and broadcasts on economic and international affairs, is the author of many publications and is the London correspondent of *The Eastern Economist* of New Delhi.

overtook them because twice they attempted to be politically and economically self-sufficient. They draw the moral that politically Germany can survive only as one of an alliance, and economically as part of a larger complementary area.

The physical disasters and spiritual humiliations of defeat, occupation, and aerial bombardment, experienced by France, Italy, Holland and Belgium, were followed by the awakening to liberation in a profoundly changed world, in which Europe seemed bound to be overshadowed by the Soviet Union and the United States. This gave impetus to ideas of European political co-operation—to which there was an immediate response in Germany. Such aspirations found several outlets, of which the most dramatic was the European Defence Community. The rejection of this by the French Assembly in August, 1954, opened the gravest crisis that the free world had faced since the end of the war. But the "European idea" had taken too deep a hold on the imagination of Continental Europe: "good Europeans" re-grouped their forces to "re-launch Europe". The European common market scheme was salvaged from the European Defence Community, of which it had been a part.

The British student of affairs will be baffled by the controversies springing up between the six common market countries and the rest of Europe, headed by Britain in the Organization for European Economic Co-operation, unless he grasps the point that, to the Six, the common market treaty is primarily a move towards closer co-operation for the preservation of Europe as a political and cultural force in world affairs. The Six certainly regard the economic consequences of the treaty as important; but they are sub-ordinate to the idea of the survival of Europe through joint action.

The British observer who studies the common market treaty is surprised by what seem the extraordinary concessions made to France. The Germans have agreed to invest $200 millions, spread over twelve years, in the French overseas territories. Exports from these territories will be freely admitted into the common market, but their imports from the members of the common market will be subject to duty. The proposals for European institutions to be set up to provide funds for the relief and rehabilitation of any thrown out of work by the abolition of tariffs, to help under-developed areas, and to ensure fair competition, had their I's heavily dotted and their

T's thickly crossed at French insistence. France also saw to it that the "harmonization" of the laws for social security should eventually load all the Six with costs on the French scale, and that the expensive and doubtfully economic French provisions for equal pay for men and women should be written into the treaty.

Why, the innocent British observer wonders, did the Germans—who are after all the strongest partners in the treaty—make these wholesale concessions to the French? He is puzzled because, to him, the primary object of the free trade area presents itself as the expansion of the volume of international trade under the stimulus of healthy competition. But French economic thought descends from the mercantilist Colbert, not from the free trade Adam Smith. The Germans, the Dutch and the Beneluxers dislike these concessions but they regard them as the price of progress towards European political integration and future return of greatness. In his negotiations with the French Premier, Dr. Adenauer was dominated by two thoughts: first, the intense desire to end the Franco-German feud which has, since 1870, thrice let war loose in Europe; secondly, the necessity to ease the French government's task in securing the signature of its Assembly to the treaty, in order to avoid a second European crisis like that which followed the rejection of the European Defence Community.

While I was in Germany, the newspapers published reports from Paris outlining French objections to the free trade area. I was therefore anxious to ascertain the German viewpoint on these difficulties. From all circles—trade, commerce, industry, labour—and from high officials of the Ministry of Economics, I received the same reply. It is one, I submit, which it is important for the British government and for responsible British public opinion to understand.

Virtually every proposal in the draft treaty for the common market, they said in effect, disturbed or alarmed powerful vested interests in each of the six countries. The negotiations between the financial and industrial specialists would thus have dragged on interminably, coming up against obstacles each more insuperable than the last. The whole scheme would therefore have perished from inanition—following the universal and fatal precedent of disarmament conferences—if Dr. Adenauer and M. Faure had not, from their position at the summit, been determined that the draft treaty *must*

be achieved—and achieved within a period of months. To accomplish this, they assigned to M. Spaak, the Belgian Foreign Minister, the whole-time job of presiding over an authoritative technical committee, with instructions not to report back on their difficulties but to produce concrete and agreed proposals. Dismissed with this political directive, the experts produced an agreed document of the most complicated kind in the record time of ten months.

My informants approved of the British government's appointment of a man of Mr. Reginald Maudling's official status and personal calibre to steer the O.E.E.C. committee on the free trade area. Nevertheless, they took the view that he would in fact remain a super-technician, engaged in the hopeless task of trying to avoid head-on clashes between experts representing opposing vested interests, unless the British Prime Minister, the German Chancellor and the French Prime Minister held a summit meeting and issued a directive to Mr. Maudling, telling him not to bother them again until he could return with an agreed document.

This point needs to be driven home, because enquiries in responsible quarters in London create the impression that, faced with the admitted complexities of setting up a free trade area, the British government, while sincere in its ultimate objective, is negotiating with no sense of urgency. There seems to be a feeling that, because no early solutions to the dire problems of French inflation and balance of payments deficits seem yet discernible, and because the common market treaty cannot be implemented as long as this is so, therefore the British have a fairly strong hand to play and can take their time in negotiations likely to last years rather than months.

If this impression is incorrect, responsible German circles feel that it should be dispelled at once. They argue that the more protracted the negotiations, the more time will vested interests in all countries have to build up lobbies and to mislead public opinion. They urge that, since France has for some thirty years slithered from one budget deficit and inflationary crisis to another, no improvements in the patient's financial health can be expected from the mere adjournment of decisions. On the contrary, the one hope of getting across to France the facts of economic life in the 'fifties of the twentieth century is to present her with an accomplished fact: a common market and free trade area bus, due to depart on an agreed schedule, which she misses at her peril.

DOES U.K. PUBLIC OPINION UNDERSTAND?

In recent speeches Mr. Macmillan has stressed Britain's inability to stand alone in the world and the importance that Britain attaches to the NATO alliance. Even so, neither official nor economic circles in Germany are convinced that the full implications of these ideas have penetrated the mass of British public opinion. The "go it alone" aspect of the Anglo-French Suez adventure was regarded with alarm throughout Germany. In drawing the moral from their two defeats, the Germans are insistent on the political consequences of pooling economic sovereignty. While not minimizing the economic consequences, they do feel that British public opinion in the mass is still too preoccupied with the free trade area's purely economic repercussions. They ask whether British public opinion is willing that the U.K. should cease to aim at economic self-sufficiency in all spheres of armaments and should be ready to rely entirely for certain types on, say, French or Italian industry, as Germany actually does. Unless Britain accepts this, as Germany has done, the Germans argue that the United Kingdom will ruin herself in the effort to maintain economic self-sufficiency in armaments. For them, the common market is primarily a means to political survival. That having been said, the Germans go on to point out that, by promoting the division of labour, the common market, especially with the addition of the free trade area, will strengthen all its partners economically.[1]

Symbolic of contemporary Germany's freedom from chauvinism was my experience when, as one of a party of official guests of the German government, I was flown to various centres. The Germans did not bother to ascertain

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[1] The "European approach" to the free trade area is apt to arouse some suspicion in Britain. A discussion of the issues involved is outside the scope of this article but two points may perhaps be submitted: (1) in so far as membership of NATO is considered vital to the survival of the U.K. and is regarded as compatible with Commonwealth interests, closer political co-operation would be but an extension of the principle thus conceded. Events all the way from Suez to Algeria (and doubtless, shortly, to the moon and back) suggest the imperative need to ensure prior co-ordination of divergent policies. (2) The possibility that Britain could remain outside a European free trade area and develop the Commonwealth as an alternative might be worth examining if Britain's balance of payments surplus, available as (a) a reserve for the sterling area and (b) for overseas investment, were nearer £400 to £500 millions a year than its recent average of £200 millions. As a footnote to this footnote, the following facts may be a source of further profitable reflection: whereas the value of the imports of the sterling area (excluding the U.K.) rose by 9 per cent. between 1952/56, the value of imports into the six common market countries rose by 47 per cent. in the same period, compared with 22 per cent. for the whole world and 24 per cent. for North America.

when a Lufthansa 'plane would be available: they booked us all on the most conveniently scheduled 'plane of any nationality. Germany is, as far as I am aware, the only country with an airline of its own which permits foreign lines to pick up passengers for a destination inside the national frontier. And here we put our finger on another reason why there have been no special studies of the impact of the common market on Germany's industries: there is no point in making them for, with certain few and obvious exceptions, Germany is either a low tariff or a free trade country already.

GERMANY REJECTS "DOMINATION" OF COMMON MARKET

When I asked the chairman of one of Germany's largest factories whether he expected to effect any economies of scale from the enlargement of his market, he said: "As far as our home market is concerned, we already have the maximum foreign competition. The European average tariff to be erected round the common market on our product seems likely to be higher than our present German tariff, so that competition might even fall slightly. That is why we are so anxious to see the free trade area established. It is a waste of time to try to forecast the future because of the complicated phasing of the tariff reductions within the market, the increases in the external wall, the possibility of national industries claiming the 'slower application' escape clauses, the possible formation of an additional free trade area and the uncertainties as to which countries may belong to it. We can only wait to see how it all turns out."

Responsible German government officials and industrial leaders reject any suggestion that Germany will dominate the common market. The concept of domination, they say, implies that one party to a commercial transaction gains and the other loses. It is wrong, I was told, to think of the common market in terms of which national industries will gain, which suffer. Of course, the national income will rise from the expansion of some industries but, they point out, the nation will gain just as much by the contraction or elimination of others, whose inability to stand up to foreign competition implies the comparatively inefficient use of the capital and labour employed in them. "You should not grieve over the 'loss' of an industry 'hit' by foreign competition, but rejoice over one burden less to carry".

In point of fact, most German leaders believe that it will be exceptional for a firm actually to close down in any country. They point to the ease with which factories can be switched from peace to war production and back again as showing the elasticity of modern techniques. They stress the manifold opportunities in so many industries for greater individual specialization on particular items. They foresee substantial economies by greater rationalization between firms, which in many cases would not involve closing down but merely switching. They recall that the changes will not come overnight but will be spread over twelve to fifteen years and suggest that any firm which cannot deal with the inevitability of such gradualness is not worth worrying about. They point out the enormous modifications that must overtake any firm under any conditions in the course of 15 years.

There is nothing in contemporary Germany corresponding to a "Buy German" outlook. On the contrary, the prejudice, if anything, is in favour of the imported article. "It's foreign. It must be good." Certain German industries, however, are admittedly apprehensive about the common market. Germany's wine growers, for example, fear the competition of French wines. Certain sections of the textile, chemical and automobile industries (particularly heavy lorries), and of the engineering and optical instruments industries believe that they face substantial rationalizations and re-alignments. German agriculture is critical, but the German government, at any rate, does not seem in awe of its farmers. My impression is that Germany will have less difficulties than any other common market country in responding to future demands for the liberalization of the system of "stabilized" agricultural *régimes* envisaged in the treaty and outlined in these pages by Mr. E. M. H. Lloyd in April, 1957.

There is a big difference in the attitudes that the German and British governments feel it necessary to take up towards industry and labour. Whereas the T.U.C. and the F.B.I. expect to have due weight given to their views, consultation between the German government and industry and labour has been informal and haphazard. "We have naturally kept them informed," a high official told me, "but things were moving so fast there mostly was not time to let them know before decisions were taken." This is substantially true also of the other common market countries. It is one more side light on their essentially political approach; for whereas the F.B.I., for

example, expects to be consulted on a policy affecting industry, they would be content to learn about H.M.G.'s policies on non-commercial matters, such as NATO or disarmament, from the newspapers.

ATTITUDE OF GERMAN WORKERS

On economic grounds, everyone in Germany is anxious that the free trade area should materialize in order to expand the common market and to combat its protectionist tendencies. One of its most important well-wishers is the *Deutscher Gewerkschaftsbund* (the D.G.B.), the German federation of trade unions. A D.G.B. spokesman assured me that there was no need to fear cheap Italian or other foreign labour: the bigger the area of the common market, the bigger the volume of demand, and therefore the stronger the tendency for wages to rise. It would not be German wage rates that would be depressed but Italian rates that would be raised. The common market would mean rationalization, concentration, and weaker firms would be eliminated. A static economy was a declining one. There must be constant change and growth. The task of the trade unions was not to impede this but to mitigate the human problems involved. At present, wage systems differed from country to country and the D.G.B. felt that the common market would facilitate the promotion of an all-European system and wage level. Inside the common market countries, political divisions weaken the trade union movement. The biggest unions in France and Italy are communist. A free trade area which included the well-organized socialist unions of the U.K., Scandinavia, Switzerland and Austria, would therefore be particularly welcome to the D.G.B. in order to provide a solid all-European trade union movement.

Like the T.U.C., the D.G.B. believes that the level and distribution of industrial development in Europe would be of such crucial importance that a greater degree of public intervention would be needed. Both T.U.C. and D.G.B. appear to regard the common market and free trade area as paving the way to bigger and better socialism, a view as vehemently rejected by the Federation of German Industries as it was by the overwhelming majority of German electors in September, 1957.

While the D.G.B. often disagreed with particular economic policies adopted by the German government to maintain the stability and buying power of the Deutsche Mark, my D.G.B.

informants said that there was no disagreement whatsoever on the objective. Here we touch on another difference in British and German experience which results in diametrically opposite approaches. The outlook of the British worker is conditioned by memories of unemployment between 1929 and 1933. No price, even inflation, it would therefore seem, is too heavy to ensure full employment. The outlook not merely of German workers but of all Germans is conditioned by memories of two inflations which wiped out all values. No price, even unemployment, is therefore too heavy to pay in order to preserve the currency. The D.G.B. is officially ready to fight the government and employers to the last ditch for the sake of higher wages but, listening to them talk, one forms the impression that they bear clearly in mind the necessity for restraint and for the avoidance of any action that would harm the export market and the currency.

GERMANY REFUSES TO IMPORT INFLATION

This fundamental difference of approach explains the difficulty that the German authorities have in grasping the foreign viewpoint on Germany's export surpluses. When I suggested that if Germany continued to pile up these surpluses she would eventually seal up the channels of European trade against her, a responsible German source replied: "What has made the demand for our goods so voracious has been (a) the world hunger for capital goods which German industry could develop more capacity to satisfy than other over-extended, over-fully employed, economies with their concomitant production bottle-necks; (b) the stability of our prices contrasted with (c) the ever growing inflation abroad, particularly in Belgium, France and the Netherlands, the countries mainly in deficit to Germany. Do you realize that since the loss of our East German agricultural lands, West Germany must, every bit as much as the U.K., export manufactures to live? Why, then, should we risk the loss of markets by putting up our export prices through appreciating the Deutsche Mark? Moreover, what guarantee is there that, were we to do so, the other countries would cease inflation once and for all? The probabilities are that one Deutsche Mark appreciation would follow after another at intervals."

Relevant comments on these arguments are to be found in the O.E.E.C. Report for 1957 on Economic Conditions in

Germany and in proceedings of the twelfth session of G.A.T.T. held in November, 1957.

In its conclusions, the O.E.E.C. Report, which represents the agreed view of the Organization as a whole, observes that it is not unreasonable that a country with Germany's industrial and commercial structure should have a more or less permanent surplus on current account. A current surplus of moderate dimensions would not raise problems for other countries if it were matched by offsetting items in the capital balance. Unfortunately, says the Report, recent developments in the capital account do not hold out much prospect of an increase in the outflow necessary to balance even a much reduced current surplus. But a reduction in the current surplus would itself make possible a less restrictive monetary policy, including a lowering of interest rates, which in turn would encourage a greater capital outflow. In the view of the O.E.E.C., it is therefore essential that measures should simultaneously be taken to reduce the current surplus and to pursue monetary policies that would allow the long-term capital market to be strengthened.

At the final G.A.T.T. meeting in November, a motion supported by the U.K., the U.S.A., Canada and Australia, was tabled that, since Germany was no longer suffering from balance of payments difficulties, she was no longer entitled to invoke Article 12 of the General Agreement and was therefore under the obligation to liberalize imports completely. That this motion was lost by one vote does not mean G.A.T.T.'s approval of the German standpoint but merely that several countries could not agree on certain matters of procedure. The report of the working group set up by the G.A.T.T. takes the view that the latest German liberalization measures are inadequate and that Germany should ask for a "hard core waiver" for five years.

There are many in Germany, some in the circles directly responsible for decisions of financial policy, who sympathize with the criticism that Germany has been building power stations in Africa instead of Germany and selling abroad too many cars that German consumers could have enjoyed. However, they insist that, in an imperfect world, policy makers are rarely offered a choice between evil and good, but between evils. In the choice between allowing export sales to expand internal credit to the point of importing foreign inflation on the one hand, or keeping domestic prices stable at the cost of

slowing down domestic consumption and even capital investment, on the other hand, the latter policy received the support of all Germans.

In the light of German experience and psychology, the foreign observer must feel diffident in criticizing this choice, for the fact remains that at the slightest suggestion of inflation, goods disappear from the German markets—as was demonstrated in the period following the currency reform in June, 1948, when certain factors caused a momentary revival of inflation. This led to immediate hoarding with its attendant economic difficulties. Nevertheless, if every country were to persist in following national objectives to the disregard of their external implications, it is clear that no international currency *régime* could hope to survive, a truth acknowledged at the various post-war conferences and implicit in the international institutions to which these gave rise.

WILL GERMANY'S EXPORT SURPLUSES SHRINK?

Germany's leaders believe that her export surpluses now present a diminishing problem, for various reasons.

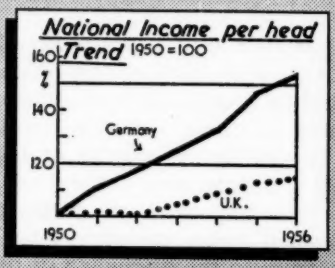
First, Germany's capacity to expand production rapidly has, to an appreciable extent, depended on the reservoir of labour constantly replenished by the inflow of the 12,000,000 refugees who have entered from East Germany since the partition[1]. But numbers have now fallen, and the working capacity of present refugees is for various reasons reported to be inferior to those who came before. Full employment has now been reached. Unemployment in mid-1957 was about 2 per cent. The German government is seeking to expand the national labour force by recruitment abroad; a hundred thousand Italians, for example, entered by inter-governmental agreement in 1956.

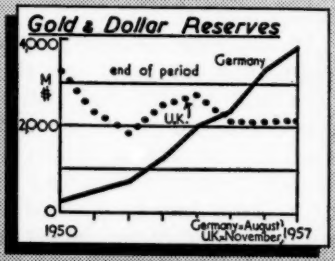
Such increase in the numbers of workers as there was in 1956/57 has been offset by an average reduction of working hours over the whole of industry by two hours a week. It is interesting to note that after all his efforts in the hard post-war years, the German worker appears to enjoy his increased leisure because, although basic wages are higher, "take home" wages tend to be lower. This has naturally led the workers to press for higher rates. The post-war bulge in births is now past and the number of children of school-leaving age continues to decrease. Thus the possibilities of expanding the total labour force are now limited.

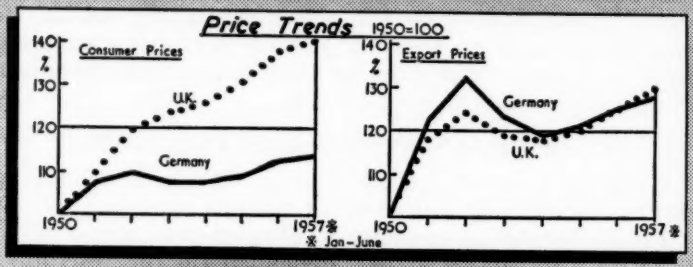
[1] See chart overleaf.

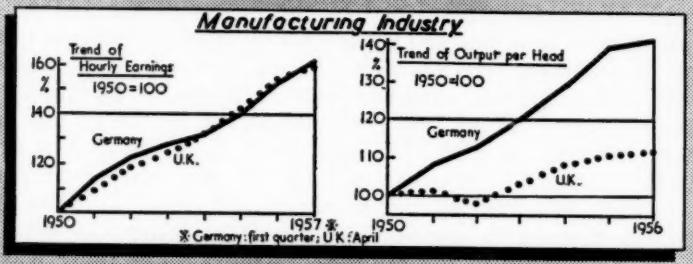
GERMANY

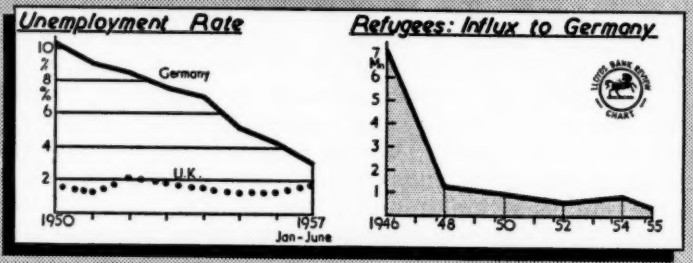
SOME COMPARISONS WITH U.K.











SOURCES: O.E.E.C. Statistical Bulletin; German Embassy

See also charts on page 47.

Secondly, after ten years of exemplary restraint, the mass of German workers are insisting more and more on a larger share of the cake. Many observers are nervous that this may set off a spiral of higher and higher wage claims and they are not too confident of the D.G.B.'s ability to restrain local union branches. In the twelve months ending February, 1957, a rise in gross hourly industrial wages of 8 per cent. was offset only to the extent of 4 per cent. by a rise in productivity. The annual percentage increase in the gross national product, which was 9·6 per cent. in 1956, is forecast as 6 per cent. for 1957. The further decrease in working hours now envisaged, taken with the inelasticity of the labour supply, suggests that the future expansion of Germany's economy will therefore depend to a greater degree than hitherto on raising productivity. But higher productivity normally depends on higher investment per worker. It is therefore relevant to recall the severe shortage of capital that exists in Germany. Overdrafts cost between 9 and 11½ per cent. and long-term bonds have recently been issued at 7½ per cent.

Then there are the spectacular cash balances accumulated by Dr. Schaeffer, the former Finance Minister. At their peak in September, 1956, these had the effect of removing DM 7,778 millions (£665 millions) right out of Germany's economy. They are now steadily falling because of tax reductions, increased pensions and rising defence costs. The 1957/58 budget estimates show a substantial deficit of DM 6,000 millions, and although forecasts on present returns suggest that this deficit will not materialize, the whole set of the German magnetic needle is now towards rising national expenditure on defence and on welfare, accompanied by rising personal expenditure on consumer goods.

Again, the Deutsche Bundesbank's Monthly Report for October, 1957, placed on record that "the pull of foreign demand, the expansive effect of which on over-all activity had to be offset well into the present year by corresponding pressure on domestic demand, shows signs of weakening." In the monthly average for the six winter months of 1956/57, incoming foreign orders exceeded export deliveries by 14 per cent. By September, 1957, they had fallen below current deliveries by 5 per cent. Deutsche Bundesbank circles, which keep a lynx-like watch on inflationary trends in foreign countries, were, when I discussed the matter with them, inclined to take the view that, with the notable exception of India, most of

the free countries of the world had in recent months either halted their inflations or (as in the U.K.) were fully alive to their peril and were taking active steps to do so.

Finally, Germany's surplus on her balance of payments has ceased to rise and shows a slight downward movement. From January to September, 1957, at DM 2·5 billions, it was smaller than in the corresponding period in 1956 by DM 220 millions. Although the surpluses on goods and services have become considerably greater this year, the Deutsche Bundesbank reports a rise in the deficit on capital transactions and donations, due mainly to a rise in indemnification payments and deliveries abroad, and to the growth in medium and long-term investment abroad. Apart from government payments (debts etc.), the net export of private capital in January-September, 1957, at DM 592 millions was almost three times that in January-September, 1956, and slightly exceeded the likewise greatly expanded private import of capital. Turning to the balance of trade and comparing the period January-September, 1956, with January-September 1957, the year-to-year growth ratio of German exports had dropped from 20·4 per cent. to 18·6, whereas the import ratio for the same periods had risen from 14 to 15 per cent.

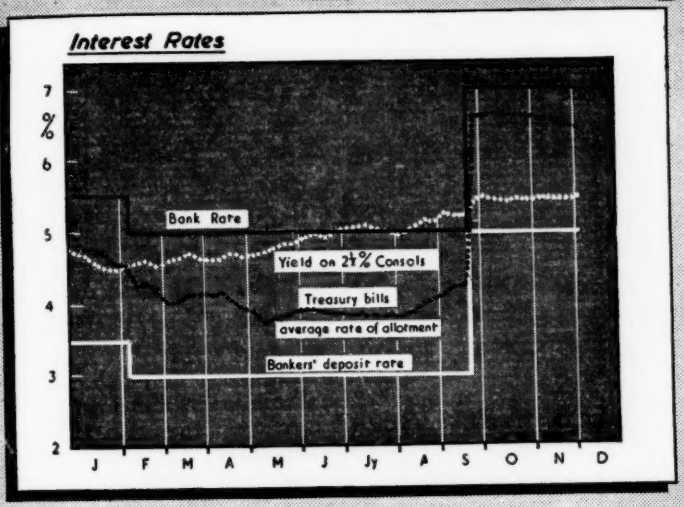
All these factors taken together suggest that, *providing that Britain, France, and the rest of Germany's foreign customers succeed in halting their inflations*, the trend of Germany's export surpluses is towards manageable proportions. From the viewpoint of the fulfilment of hopes for a common market and free trade area, this is important for two reasons. First, a common market must obviously be difficult to work if any member's over-all balance of payments is heavily out of line with the others. Secondly, some of the trends noted imply that Germany is after all inhabited not by a race of miracle men but by human beings subject to the same economic temptations as the rest of us. This makes Germany's remarkable post-war development rather less awe-inspiring and should help the United Kingdom and other O.E.E.C. countries to look her confidently in the eye as a common market partner.

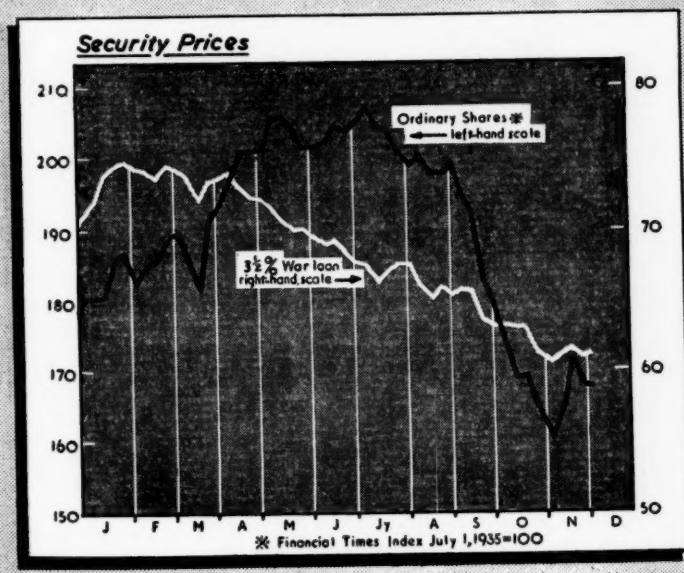
Jossleyn Hennessy.

London.
December, 1957

BANK RATE & MARKETS

1957

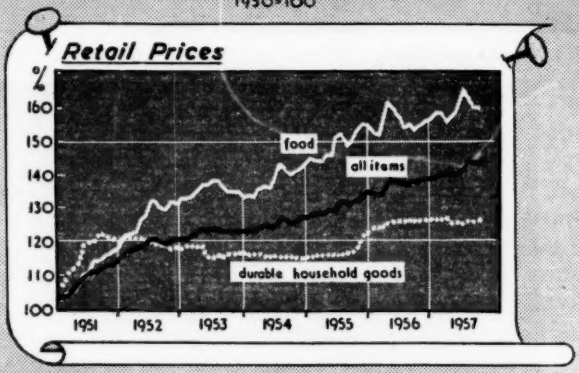


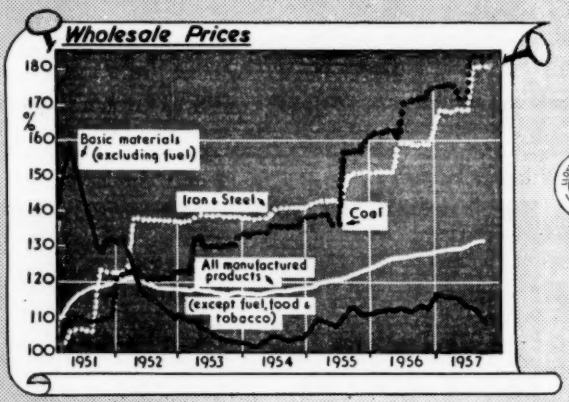


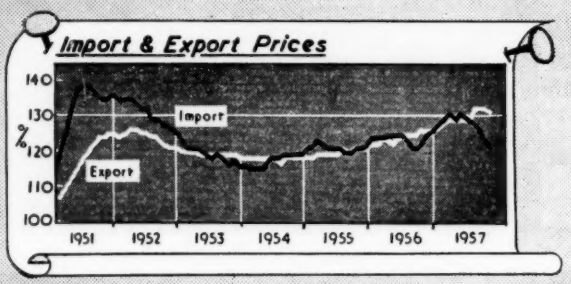
SOURCES: Financial Times
Economist.

U.K. PRICES

1950=100



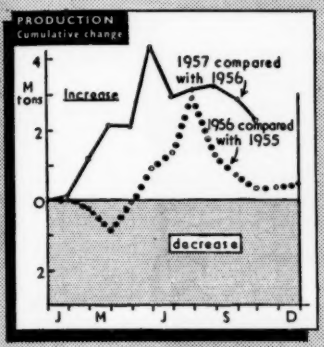


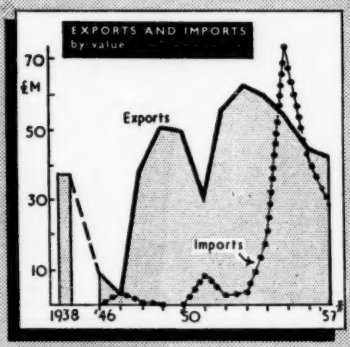


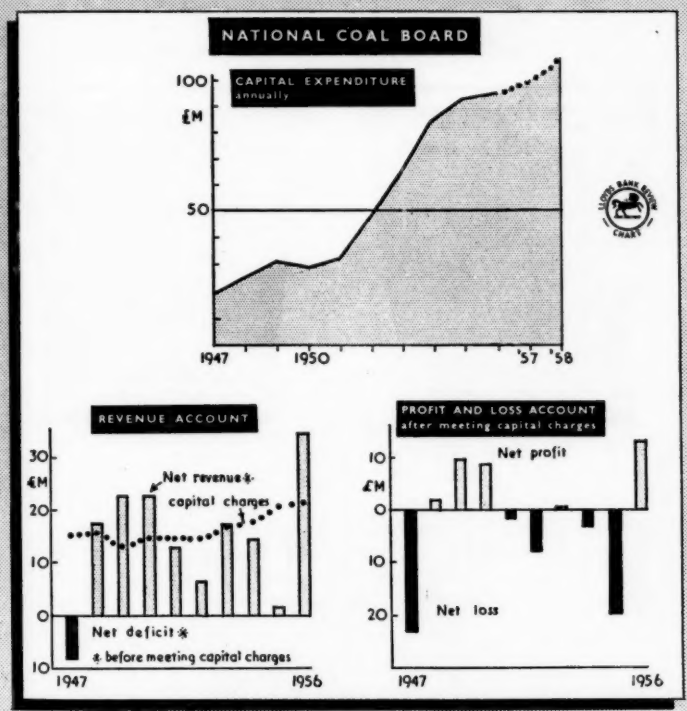
SOURCES: Ministry of Labour Gazette
Board of Trade Journal

While retail prices continued to creep upwards, wholesale prices of basic materials used in industry (other than fuel) declined sharply during 1957, as did import prices.

COAL







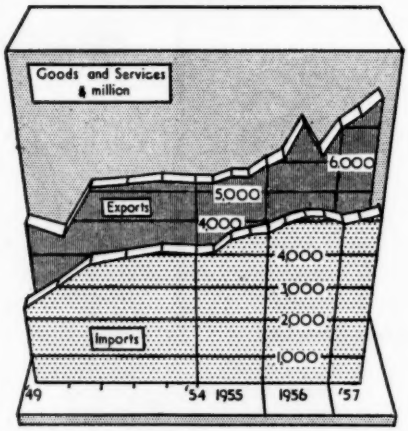
SOURCES: National Coal Board Reports
Ministry of Power

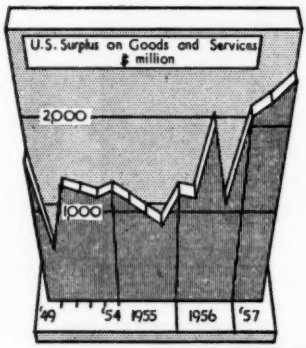
* Jan–Sept at annual rate

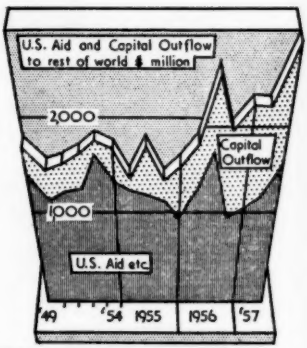
At the end of May coal output was more than 4 million tons higher on the year; from then until mid-December output was over 2½ million tons less than in the corresponding period of 1956. The attendance qualification for the shift bonus was removed in June.

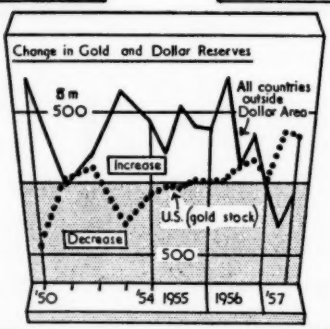
THE DOLLAR GAP

U.S. BALANCE OF PAYMENTS







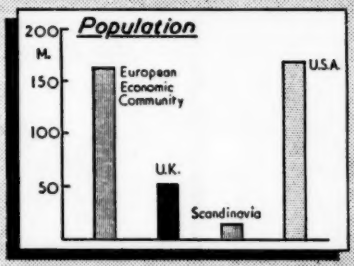


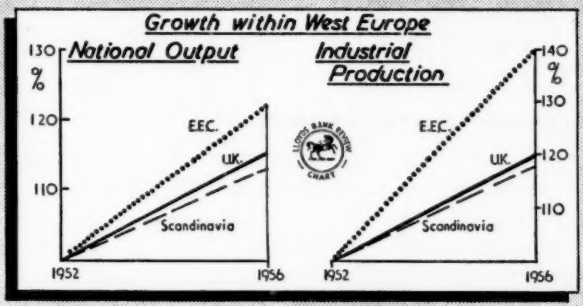
SOURCES: Survey of Current Business
Federal Reserve Bulletin

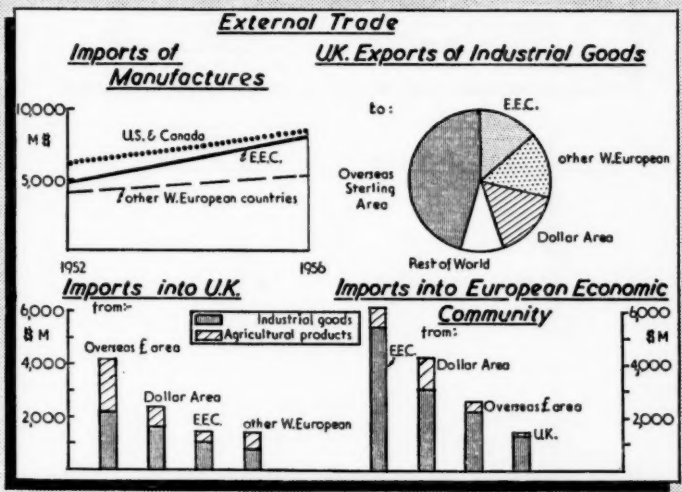
NOTE: Figures in above charts are quarterly or quarterly averages

Recently, the growth of U.S. exports has been outstripping that of imports. Notwithstanding the larger outflow of American capital, the U.S. gold stock has been rising and the reserves of countries outside the dollar area falling.

FREE TRADE AREA





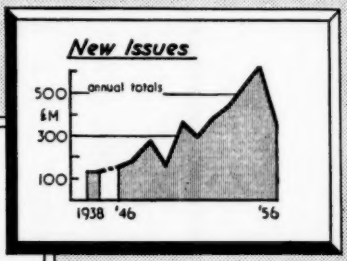


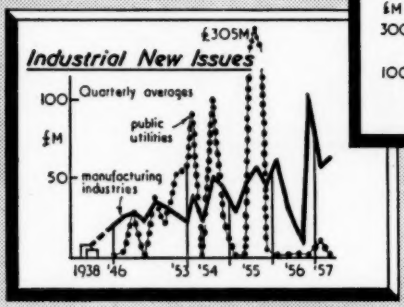
SOURCE: O.E.E.C. publications

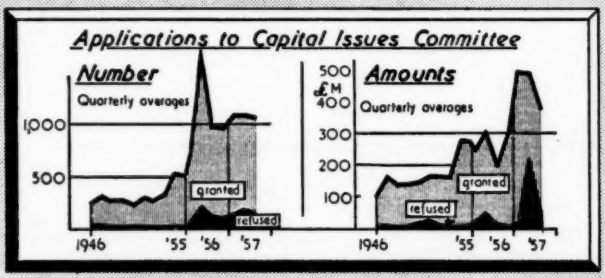
E.E.C. comprises Belgium, France, Italy, Luxembourg, Germany, Netherlands

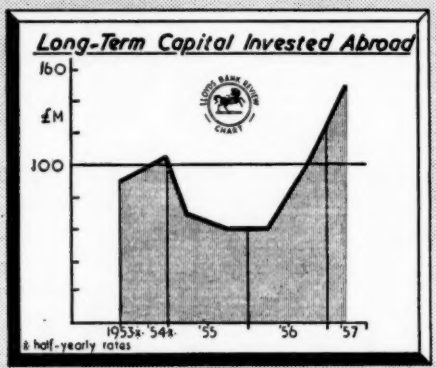
The above diagrams illustrate some of the main economic factors in the European Economic Community, with which the U.K. plans to associate in a free trade area.

CAPITAL ISSUES









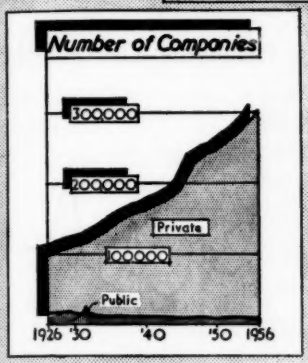
SOURCE: Monthly Digest of Statistics
Balance of Payments White Papers

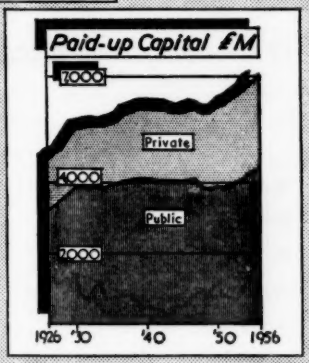
NOTE: New Issue Figures exclude U.K. government issues

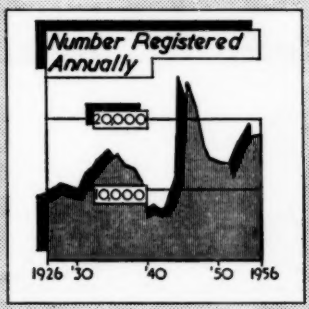
Notwithstanding the credit squeeze, applications approved by the Capital Issues Committee (as Mr. H. B. Rose points out on page 8 of this issue) have continued to run at high levels.

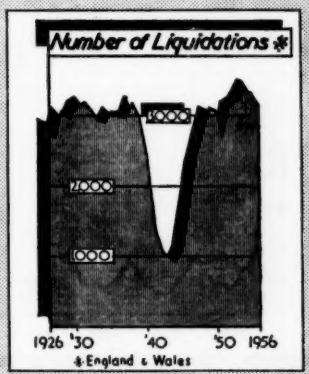
COMPANIES

GT. BRITAIN





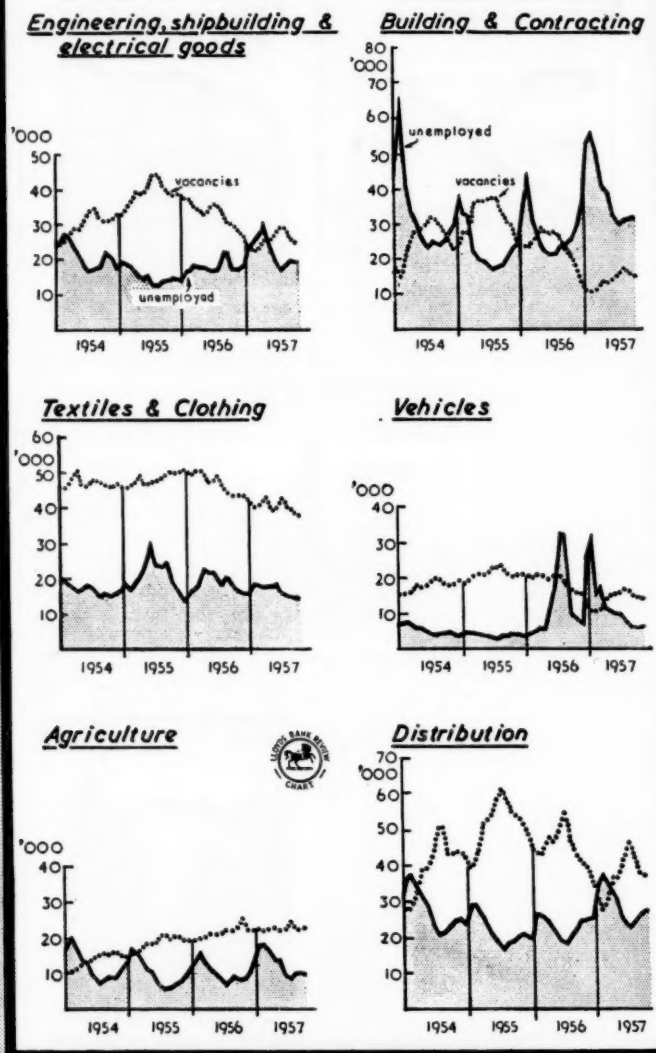




SOURCE: Companies Annual Reports

The total number of companies has trebled since 1926, although the number of *public* companies has fallen by nearly a third. The latter, though relatively small in numbers, account for about two-thirds of total paid-up capital.

UNEMPLOYMENT & VACANCIES



SOURCE: Ministry of Labour Gazette

In most of the above industries vacancies still exceed unemployment, although the gap has narrowed over the last two years. In building and contracting, however, there are now twice as many people unemployed as there are jobs vacant.